

SLIDE RULE FOR MUSIC

The present invention relates to a slide rule for music and in particular, but not exclusively, to a slide rule for indicating musical intervals, scales and chords.

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It is known that devices exist for calculating the notes to be played in different scales and chords in different keys. However, such devices generally fail to demonstrate the interval structures that are inherent in all forms of music or to integrate the visual aspects of written music (of the western system) in a single unit that not only provides
10 information but also promotes a conceptual understanding in the user.

The need for a device that presents this information clearly derives in part from the fact that both linguistically and visually on the stave, the twelve tones that make up the western chromatic scale are for historical reasons represented by only seven letters
15 (or eight in German), which are primarily assigned to the irregular sequence of notes known as the Major scale. This creates the need for additional symbols (sharps and flats) to compensate for the deficiency in names. The result is a confusing multiplication of names (a minimum of 21 enharmonic names for the twelve notes and 30 key names).

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In written music, the lines of the staff or stave and the spaces between them represent the notes of the major scale in the key of C. However, the musical intervals between these notes are not all equal. Further, each note alternates between being positioned on a line and in a space with every octave above or below its starting position. There
25 is therefore much in the system that is confusing and obscures what might otherwise be quite simple to understand and learn. For example, it is not immediately apparent from looking at written music or the finger positions on a keyboard (and many other instruments) that the whole tone intervals say E-F# and F-G are the same.

30 It is an object of the present invention to provide a slide rule for music that mitigates at least some of the afore-mentioned problems.

According to the present invention there is provided a slide rule for music, the slide rule including at least some of the features described herein.

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The slide rule serves to reveal the interval structures of scales, chords and modes in a simple visual analogy to music whilst at the same time referring to the conventional

CLAIMS

1. A slide rule for music, including a first element that includes a first set of indicia representing in linear form the structures of a plurality of musical scales, chords and/or modes, and a second element that includes a second set of indicia representing the names of the notes of a chromatic scale, the second element being constructed and arranged for movement relative to the first element in two orthogonal directions, so as to indicate the relationship between the notes of the chromatic scale and the structure of a selected one of the musical scales, chords and/or modes.
2. A slide rule according to claim 1, wherein the first and second elements comprise concentric substantially cylindrical elements that are constructed and arranged for rotational and axial relative movement.
3. A slide rule according to claim 2, wherein the first element is located within the second element.
4. A slide rule according to claim 3, wherein the second element includes at least one window through which a portion of the first element may be viewed.
5. A slide rule according to claim 4, wherein the said at least one window comprises a slot or transparent portion that extends longitudinally and/or radially.
6. A slide rule according to any one of claims 2 to 5, including a third substantially cylindrical element that is located concentrically between the first and second elements.
7. A slide rule according to claim 6, wherein the third element is constructed and arranged for only axial movement relative to the second element and only rotational movement relative to the first element.
8. A slide rule according to claim 6 or claim 7, wherein the second element includes at least one window through which a portion of the third element may be viewed.
9. A slide rule according to any one of claims 6 to 8, wherein the second and third elements include aligned windows through which a portion of the first element may be viewed.
10. A slide rule according to any one of claims 6 to 9, wherein the second element includes a third set of indicia representing various key signatures and the third element includes a fourth set of indicia for indicating relative to the third set of

indicia the appropriate key signatures for a selected note or key.

11. A slide rule according to any one of claims 6 to 10, wherein the third element includes a fifth set of indicia representing graphically the pitch ranges of various musical instruments and/or voices and the second element includes a
5 sixth set of indicia for indicating relative to the fifth set of indicia the musical notes corresponding to a selected one of the pitch ranges.
12. A slide rule according to any one of claims 6 to 11, wherein the third element includes a seventh set of indicia for indicating, relative to the second set of indicia, the degrees of a major and/or minor scale and/or the note designations
10 of a chromatic scale, for a selected scale, chord and/or mode.
13. A slide rule according to any one of claims 2 to 12, including a substantially cylindrical fourth element that is constructed and arranged for axial and/or rotational movement relative to the second element.
14. A slide rule according to claim 13, in which the fourth element that is
15 constructed and arranged to be fitted removably around the second element.
15. A slide rule according to claim 13 or claim 14, in which the fourth element includes indicia for transposition and/or reference purposes.
16. A slide rule according to any one of claims 13 to 15, in which the fourth element includes an area adapted to receive pencil and/or pen markings.

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SMRP73060PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 02/04774	International filing date (day/month/year) 22.10.2002	Priority date (day/month/year) 22.10.2002
International Patent Classification (IPC) or both national classification and IPC G09B15/00		
Applicant GUINNESS, Matthew		



- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 13.05.2004	Date of completion of this report 15.11.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Beauce, G Telephone No. +49 89 2399-2519 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 02/04774**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

2-12 as originally filed
1 received on 01.10.2004 with letter of 01.10.2004

Claims, Numbers

1-16 received on 01.10.2004 with letter of 01.10.2004

Drawings, Sheets

1/19-19/19 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-16
	No: Claims	
Inventive step (IS)	Yes: Claims	1-16
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 02/04774

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:
D1 = US-A-5 524 522 (HESNAN JOHN) 11 June 1996 (1996-06-11)
D2 = US-A-5 415 071 (DAVIES PETER M) 16 May 1995 (1995-05-16)
2. Document D1 is considered to represent the most relevant state of the art and discloses all the features of the preamble of independent claim 1.
The subject-matter of independent claim 1 differs from the prior art D1 in that the second element is constructed and arranged for movement relative to the first element in two orthogonal directions, so as to indicate the relationship between the notes of the chromatic scale and the structure of a selected one of the musical scales, chords and or modes.
3. Starting from D1, the problem to be solved appear to be to provide indication of the note relationships for scales in a number of different keys and in a number of different types of scale, mode or chord.
4. The solution proposed consists in providing a ruler which may be manipulate such that it can be either rotatably or slidably moveable.
5. Such a solution cannot be derived in an obvious manner from the reading of D1 and the remaining documents cited in the International Search Report, integrated with the general knowledge of a skilled engineer.

The subject-matter of independent claim 1 is therefore new and involves an inventive step (Article 33(2)(3) PCT).
6. Industrial applicability is also given (Article 33(3) PCT).
7. Regarding dependent claims 2 to 16 , they appear to meet the requirements of Article 33 PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 02/04774